Orthogenetic saltation.—BENEDICT[14] has undertaken a study of the variations of the Boston fern (*Nephrolepis exaltata bostoniensis*). His title is selected to emphasize two points: (1) the variations are discontinuous (saltation), and (2) they occur in a definite series along a few limited lines (orthogenetic). It seems that from this fern there have arisen more than 100 forms in less than 15 years. The present paper is concerned chiefly with a record of the facts. Uniform and highly developed cultural conditions are thought to favor the preservation of variations which under wild conditions would be eliminated.

The variations are classified as progressive and regressive, implying in the one case increasing departure from the parent form and in the other case a return toward the parent form. Progressive variations have appeared along three main lines: (1) increasing division of the leaf, observed through 5 vegetative generations; (2) increasing ruffling of the pinnae, observed through 3 generations; and (3) dwarfing, observed through 3 generations. Regressive variations rarely if ever show a complete return to the parent form. The coefficient of variation for progressive variations is very low, probably between 1:1,000,000 and 1:1,000; while regressive variation is much more common. The variations are all discontinuous and the differences are said to be as great as those existing between many wild species of ferns. The main difference between these variations and those shown by wild forms is that the former do not survive natural conditions, the variation usually being accompanied by diminished vigor.—J. M. C.

Anomalous endosperm and the problem of bud sports.—EMERSON[15] has recorded some new and interesting cases of hybrid maize kernels in which half of the endosperm shows a different combination of Mendelian characters from the other half, although it is obvious, from the fact that both parts show xenia, that the endosperm as a whole is due to double fertilization. He discusses two hypotheses, either of which might account for such kernels, namely, EAST and HAYES' hypothesis of somatic segregation and his own hypothesis of somatic mutation. A third, suggested years ago by COULTER and CHAMBERLAIN, seems to the reviewer more plausible than either. In certain plants it has been observed that the division of the primary endosperm nucleus begins before the constituent nuclei have lost their identity. If such a condition were to be demonstrated in maize, we would have a mechanism for the production of mosaic endosperm which could be called neither segregation nor mutation, in the sense in which EMERSON obviously uses the latter term

[14] BENEDICT, R. C., The origin of new varieties of *Nephrolepis* by orthogenetic saltation. I. Progressive variations. Bull. Torr. Bot. Club **43**:207–234. *pls. 10–15.* 1916.

[15] EMERSON, R. A., Anomalous endosperm development in maize and the problem of bud sports. Zeitschr. Ind. Abstamm. u. Vererb. **14**:241–259. 1915.

when he speaks of the origin of a recessive Mendelian variety as a bud sport. The hypothesis of incomplete triple fusion is in a way a compromise between the inapplicable and discarded older hypotheses involving entire suppression of the triple fusion and the later ones involving no gross cytological aberrations whatever. Although heartily in accord with EMERSON'S well-considered views in regard to somatic mutation in general, the reviewer must confess to a distrust of drawing a close parallel between bud sports and anomalous endosperm development.—H. H. BARTLETT.

Tubers of Nephrolepis.—SAHNI[16] has investigated the vascular anatomy of the tubers borne on the underground stolons of *Nephrolepis*, and has uncovered a very interesting situation. The vascular strand of the stolon penetrates the base of the tuber as a protostele for a short distance, and then expands into a funnel, acquiring in succession internal phloem, pericycle, endodermis, and "ground tissue." Later the funnel-like stele breaks up, at the same time expanding enormously, into a hollow network of ribbon-like strands (each concentric in structure) inclosing gaps of irregular shape and size. These strands converge again into a single protostelic strand, which usually ends in the apical "mamelon." Root strands arise promiscuously from this reticulate stele. SAHNI calls attention to the fact that the conspicuous gaps that appear in this latticed cylinder cannot be explained as leaf gaps, since there is no trace of leaves on the tuber. He suggests that it is a case of a solid stele dilated sufficiently to transform it into a hollow network. TANSLEY has suggested that it is the dilation of a protostele that converts it into a siphonostele.—J. M. C.

Soil Science.—Many will welcome the founding of the new journal *Soil Science*. It is published (first number January 1916) at Rutgers College, with JACOB G. LIPMAN as editor-in-chief, and NICHOLAS KOPELOFF and CARL R. WOODWARD as assistant editors, along with 23 consulting editors, representing experts in this line from various parts of the United States and from 9 foreign countries. The editor-in-chief outlines the scope of the journal in the following statement: "*Soil Science* is to be devoted to problems in soil physics, soil chemistry, and soil biology. Papers dealing with problems in plant physiology, agronomy, bacteriology, or geology will be accepted only when they may contribute directly to our knowledge of soil fertility." He feels that greater cooperation will be gained among American workers on soil problems by a common channel of publication, in contrast with the previous distribution of articles through a number of American and several foreign journals. Promptness of publication is also of great importance. No doubt this will bring a welcome if only a slight relief to overcrowded journals in a number of lines.—WILLIAM CROCKER.

[16] SAHNI, BIRBAL, The vascular anatomy of the tubers of *Nephrolepis*. New Phytol. 15:72–80. *figs.* 3. 1916.